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REMARKS/ARGUMENTS

Favorable reconsideration of this application is requested in view of the amendments above and the remarks which follow.

Disposition of Claims

Claims 1, 4-17, and 22 remain in this application. The Examiner has indicated that claims 4 and 15-17 are allowed. Claims 1, 5, 6, 13, and 22 have been amended as set forth above. Claim 21 has been deleted.

Objections

The Examiner objected to claim 13 because the limitation "a relative index difference of the graded-index lens" is unclear. This limitation has been amended to read as "a relative index difference between a core and cladding of the graded-index lens." Withdrawal of the objection to claim 13 is respectfully requested.

Rejections under 35 U.S.C. §103

Claims 1, 5, 11-14, and 21 were rejected under 35 U.S.C. §103(b) as being unpatentable over U.S. Patent No. 6,768,837 (Thual et al.) in view of the article titled "Ideal Microlenses for Laser to Fiber Coupling" by Edwards et al. Claim 21 has been cancelled. Accordingly, rejection of this claim is moot. Reconsideration of the rejection of claims 1, 5, and 11-14 is respectfully requested.

Claim 1, as currently amended, recites a fiber lens comprising a graded-index lens, a single-mode fiber affixed to a first end of the graded-index lens, and a refractive lens having a hyperbolic shape formed at a second end of the graded-index lens to focus a beam from the single-mode fiber to a diffraction-limited spot.

The Thual et al. patent does not disclose or teach the limitation "a single-mode fiber affixed to a first end of the graded-index lens." The single-mode fiber (MO) disclosed in the Thual et al. patent is affixed to a length of silica (SI), which is then affixed to a graded-index lens

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(GRAD). The Thual et al. does not disclose or teach that the length of silica (SI) has a graded index. The Edwards et al. article does not overcome the deficiency in the Thual et al. patent.

Claim 5, as currently amended, recites a fiber lens which comprises a graded-index lens, a single-mode fiber disposed at a first end of the graded-index lens, a single-mode fiber disposed at a first end of the graded-index lens, a refractive lens having a hyperbolic or near-hyperbolic shape disposed at a second end of the graded-index lens to focus a beam from the single-mode fiber to a diffraction-limited spot, the refractive lens having a uniform refractive index, and a spacer rod interposed between the graded-index lens and the single-mode fiber.

The Thual et al. patent does not disclose or teach the limitation "a refractive lens having a hyperbolic or near-hyperbolic shape disposed at a second end of the graded-index lens to focus a beam from the single-mode fiber to a diffraction-limited spot, the refractive index having a uniform refractive index." The refractive lens in Thual et al. is formed by lensing the end of a graded-index fiber and therefore cannot have a uniform refractive index. The Edwards article does not overcome the deficiency in the Thual et al. patent.

From the foregoing, claims 1 and 5, as currently amended, are patentable over the Thual et al. patent in view of the Edwards article. Withdrawal of the rejection of claims 1 and 5 over these references is respectfully requested. Claims 11-14, being dependent from claim 1, are likewise patentable in view of the foregoing arguments.

Allowable Subject Matter

Applicant thanks the Examiner for indicating that claims 6-10 and 22 would be allowable if rewritten in independent form including the limitations of the base claim and any intervening claims. Claims 6-10 and 22 have been rewritten in independent form. Accordingly, claims 6-10 and 22 are now in allowable form.

Conclusion

Applicant believes that this paper is fully responsive to all the grounds of rejection cited by the Examiner in the Office Action dated November 29, 2005, and respectfully requests that a timely Notice of Allowance be issued in this case.

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Please apply any charges not covered or credits in connection with this filing to Deposit Account No. 03-3325 (ref. SP02-275).

Respectfully submitted,

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